

## Claims

What is claimed is:

- 1           1.     Apparatus for customizing and monitoring multiple interfaces,  
2     and implementing enhanced fault tolerance and failure isolation features  
3     comprising:  
4         a controller, said controller including  
5         a first interface to a pair of master sources;  
6         a second interface to a plurality of target interfaces;  
7         a third interface for a plurality of predefined controller control signals;  
8         a first multiplexer coupled between said pair of master sources and  
9     said second interface to said plurality of target interfaces;  
10        a pair of second multiplexers coupled between said second interface  
11     to said plurality of target interfaces and a respective one of said pair of  
12     master sources;  
13        a pair of redundant selector functions for coupling a select signal to  
14     said first multiplexer for selecting one of said plurality of target interfaces;  
15     and  
16        a pair of redundant ATTENTION monitor functions for monitoring  
17     ATTENTION signals for each of said plurality of target interfaces.
- 1           2.     Apparatus as recited in claim 1 wherein the multiple interfaces  
2     include multiple IEEE 1149.1 standard joint test access group (JTAG)  
3     interfaces.
- 1           3.     Apparatus as recited in claim 1 wherein said pair of master  
2     sources includes a pair of service processors.
- 1           4.     Apparatus as recited in claim 1 wherein said plurality of target  
2     interfaces include a plurality of joint test access group (JTAG) interfaces.
- 1           5.     Apparatus as recited in claim 1 wherein said plurality of  
2     predefined control signals include a master control signal for defining a  
3     master of said pairs of redundant selector and ATTENTION monitor  
4     functions.

1           6.     Apparatus as recited in claim 1 wherein said plurality of  
2 predefined control signals include a reset control signal for resetting a  
3 second controller.

1           7.     Apparatus as recited in claim 1 wherein said plurality of  
2 predefined control signals include an isolate control signal for isolating a  
3 second controller from said master sources.

1           8.     Apparatus as recited in claim 1 wherein said plurality of  
2 predefined control signals include a dual configuration control signal for  
3 providing interconnecting signals between a pair of controllers or providing  
4 internal interconnecting signals between said pair of redundant functions.

1           9.     Apparatus as recited in claim 1 wherein said plurality of  
2 predefined control signals include an external master configuration control  
3 signal for defining a master of said redundant functions or of a pair of  
4 controllers.

1           10.    Apparatus as recited in claim 1 wherein said plurality of  
2 predefined control signals include a priority configuration control signal for  
3 resolving a master between said redundant functions or between a pair of  
4 controllers.

1           11.    Apparatus as recited in claim 1 wherein said master sources  
2 include a pair of service processors; and wherein said first interface to said  
3 pair of master sources include a plurality of select signals for each service  
4 processor.

1           12.    Apparatus as recited in claim 11 wherein said plurality of  
2 predefined control signals include a configuration control signal for  
3 redirecting said plurality of select signals for each service processor to a  
4 selected set of said target interfaces.

1           13.    Apparatus as recited in claim 1 includes a pair of redundant  
2 ATTENTION mask functions respectively coupled to said pair of second  
3 multiplexers for individual target interface masking.

1           14. Apparatus as recited in claim 1 includes a pair of redundant  
2 interface registers for encoding values for selecting said target interface,  
3 each respectively coupled to a respective one of said redundant selector  
4 functions.

1           15. A method for customizing and monitoring multiple interfaces  
2 with a controller and implementing enhanced fault tolerance and failure  
3 isolation features, said method comprising the steps:  
4           connecting a first interface to a pair of master sources;  
5           connecting a second interface to a plurality of target interfaces;  
6           connecting a third interface to a plurality of predefined control signals;  
7           providing a first multiplexer coupled between said pair of master  
8 sources and said second interface to said plurality of target interfaces;  
9           providing a pair of second multiplexers coupled between said second  
10 interface to said plurality of target interfaces and a respective one of said  
11 pair of master sources;  
12           utilizing a pair of redundant selector functions for coupling a select  
13 signal to said first multiplexer for selecting one of said plurality of target  
14 interfaces; and  
15           utilizing a pair of redundant ATTENTION monitor functions for  
16 monitoring ATTENTION signals for each of said plurality of target interfaces.

1           16. A method as recited in claim 15 wherein the step of connecting  
2 said third interface to said plurality of predefined control signals includes the  
3 step of providing a master control signal for defining a master of said pairs of  
4 redundant selector and ATTENTION monitor functions.

1           17. A method as recited in claim 15 wherein the step of connecting  
2 said third interface to said plurality of predefined control signals includes the  
3 step of providing an isolate control signal for providing isolation for hot  
4 plugging support on said first interface and said second interface.

1           18. A method as recited in claim 15 wherein the step of connecting  
2 said third interface to said plurality of predefined control signals includes the  
3 step of providing a configuration control signal for redirecting a plurality of  
4 select signals for each master source to a selected set of said target  
5 interfaces.

1           19.    A method as recited in claim 15 wherein the step of connecting  
2   said third interface to said plurality of predefined control signals includes the  
3   step of providing a priority configuration control signal for resolving a master  
4   between said redundant functions or between a pair of controllers.

1           20.    A method as recited in claim 15 includes the step of providing a  
2   respective interface register respectively coupled to one of said pair of  
3   redundant selector functions for encoding values for selecting said target  
4   interface.